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ABSTRACT

The two units of the instructional package included in this document are: Introduction to Serials Indexing and Abstracting Services and Introduction to Reports Indexing and Abstracting Services. The unit on serials is limited to periodicals. It discusses the factors to be considered when choosing an abstracting and indexing service to use for specific purposes. The reports indexing and abstracting services unit discusses the three main kinds of jobs that require knowledge of the technical report literature and its tools. It then looks at the Clearinghouse for Federal Scientific and Technical Information (now called the National Technical Information Service) in some detail. (Other units of this instructional package are: LI004051-004053 and LI004055. The instructional package is discussed in ED032085.) (Author/NH)

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REFERENCE TOOLS AND SERVICES:

Introduction to Serials

and

Reports Indexing

and

Abstracting Services

On-The-Job Training of Library Personnel

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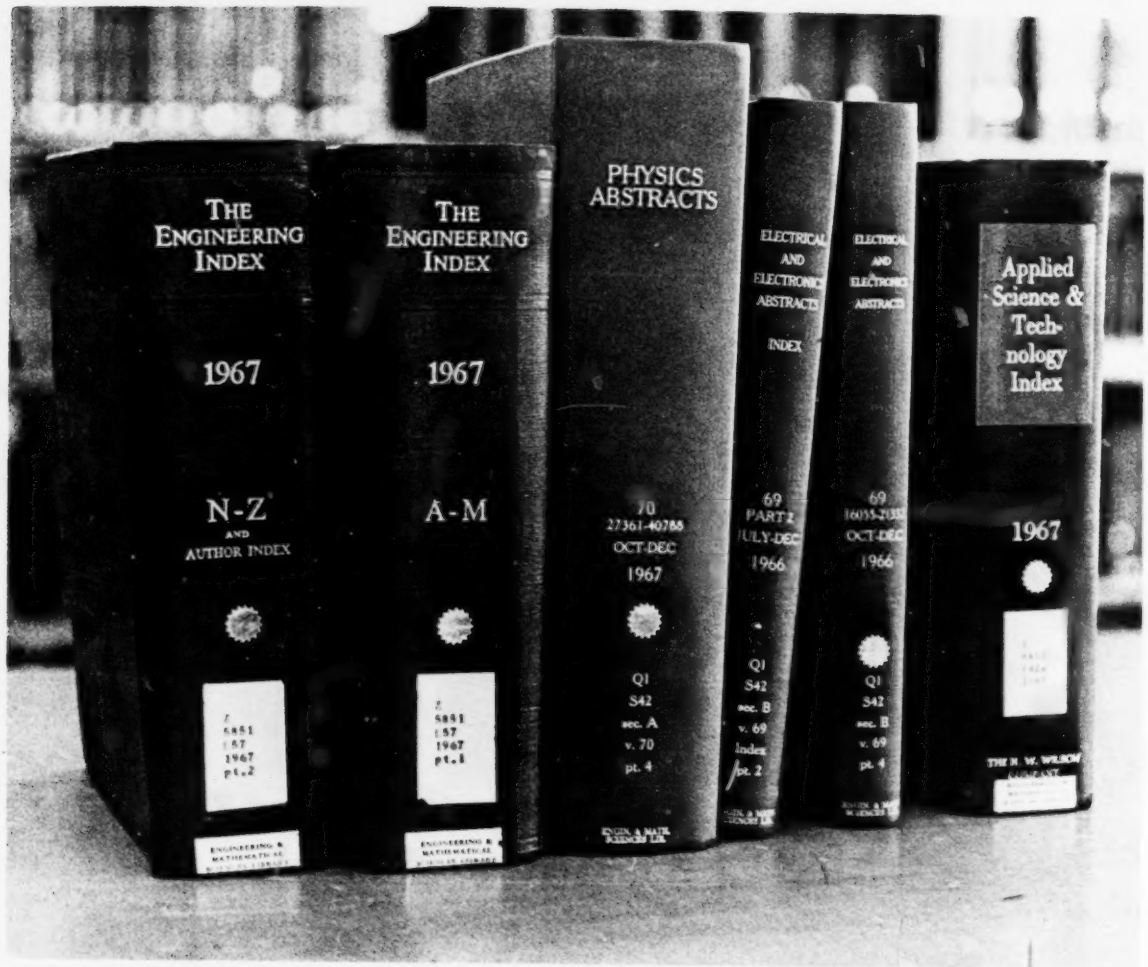
INTRODUCTION TO SERIALS INDEXING AND ABSTRACTING SERVICES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ELECTRICAL AND ELECTRONIC ABSTRACTS
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Applied Science & Technology Index
1967

Figure 1

PRELIMINARY QUIZ

On a Separate Piece of Paper, Try to Answer the Following Questions as Quickly as you can.

1. Give two reasons why abstracting services are important.
2. Name two different types of abstracts and give a brief definition of each.
3. Give two basic differences between the Applied Science and Technology Index and the Engineering Index.
4. What major change has been made in the arrangement of material in Science Abstracts in the last ten years?
5. What index would you look in for material on air pollution? Indicate why you chose that index in preference to some other index.
6. Give two basic ways in which the abstracts can be arranged.
7. What kinds of indexes are useful to supplement the basic arrangement of an abstracting index?
8. Give two basic differences between Engineering Index and Science Abstracts.
9. How soon after an article is published can one expect to find it indexed in an indexing or abstracting service?
10. In addition to the abstract, what other clues in the reference indicate the possible value of the article to your literature search?

11. What is the frequency of publication of:
    a. Chemical Abstracts
    b. Electrical and Electronic Abstracts
    c. Mathematical Reviews
    d. Nuclear Science Abstracts
12. Name the sections of Science Abstracts.

If you have had no difficulty with these questions, you probably will not need to study the following units. You will find the answers on page 19.

INDEXES TO SERIAL PUBLICATIONS

Serials are publications issued in some kind of sequence, at regular or irregular intervals of time, for an indefinite period of time. (Thus books issued in several volumes, are not considered to be serials.) Serial publications can be periodical journals or magazines, annual proceedings, serially numbered documents or reports, and daily newspapers. In this study unit, we will limit our discussion to the category of periodicals.

The word "periodical" indicates that these publications are issued periodically. Most of them are issued monthly, bimonthly, or quarterly. These can be divided into popular and semi-popular magazines, and scholarly, technical, review, and indexing and abstracting journals.

A popular magazine, such as Popular Mechanics, is one of general interest to the public and is written in an easy-to-understand style. A semi-popular magazine, such as Scientific American, is for the intelligent layman and may be written in a slightly more scientific or technical style. A scholarly or technical journal, such as American Historical Review or Datamation, is intended for specialists in a particular field and is apt to be written in the jargon of that field. A review journal, such as Harvard Educational Review, contains articles reviewing recent developments or the current state-of-the-art of a particular field; these articles are often accompanied by lengthy

bibliographies of the pertinent literature. An indexing journal, such as the Readers' Guide to Periodical Literature, indexes books and articles in a particular field (such as education) or of a particular type (such as periodical literature) by providing bibliographic citations under various headings. An abstracting indexing journal, such as Chemical Abstracts, not only indexes literature but also includes abstracts or short summaries of the literature.

If you can, give the title of another periodical in each of the following categories:

Popular_____
Semi-popular_____
Scholarly_____
Technical_____
Review_____
Indexing_____
Abstracting indexing_____

This unit of study is intended to develop your knowledge of indexing and abstracting journals as a class of reference sources, and with some indication of their importance, scope, peculiarities, and use.

There are many estimates of the extent of periodical literature. There are probably some 50,000 current serial

titles in science and technology issued throughout the world. Chemical Abstracts issued some 300,000 abstracts during 1967, taken from 11,000 journals, over 50 languages, from 100 countries. Probably, close to 3,000,000 scientific and technical papers are now being published each year.

The keys to this vast source of information are the indexing and abstracting services, by means of which the contents of these thousands of journals can be searched by author and/or subject. The needs for up-to-dateness, completeness, and accuracy of the indexes put heavy pressure on these services to maintain current, effective, and specific indexes. The problems that arise in providing such services are challenging the ingenuity of those who work in the field of library and documentation systems.

Indexes to journal literature differ in some important ways from indexes to report literature. Since technical reports are project-oriented, not subject-oriented, technical reports indexes tend to emphasize the names of agencies where work was done. Furthermore, technical reports are often written in detailed, specialized language that is difficult to index. Many indexing services employ technically trained persons to convert the specialized research language into more general index terms to facilitate searching.

Indexing schemes for journal articles should provide a subject approach that is both organized on broad lines and capable of pinpointing specific subjects. Author indexes are important, especially in annual cumulations of the indexes. Abstracts and accurate citations are essential for most effective use of such indexes.

List two indexing or abstracting journal titles and give a brief description of their organization and useful features.

_____

_____

_____

_____

_____

_____

There are probably more than 4,000 world-wide scientific abstracting and indexing services at this time, with more being added as new publications and new specialized subjects develop. The knowledge necessary to do reference work with these indexes is not easy to come by. Even after some indexes have become familiar through frequent use, the reference worker must be aware of changes in coverage, indexing format, and frequency, especially where indexing services are experimenting with new techniques.

Choosing services to look into for any given search requires knowing what services are available, what they represent, and how they relate to each other. Here are some general points to consider on coverage:

a. Some large services provide very broad coverage over a wide range of the literature, but such coverage is often not "in depth" (that is, exhaustive) in any one subject area.

b. Some larger services tend to cover the "key" journals--those containing a high proportion of contributions judged most important in the field. This means that these key journals are covered by many indexing services, whereas new or specialized journals may not be covered by any of the major indexes.

c. More-specialized services, limited to a specialized subject, provide in-depth coverage of more-specialized publications, with more specific index terms and often through a carefully developed classified arrangement. The more specialized services, therefore, are usually the most useful in pursuing an exhaustive search.

d. A few comprehensive indexes attempt to keep up with the world-wide literature in their fields, no matter how much is published. An outstanding

example of this is Chemical Abstracts. The 1967 issues fill 40-1/2 inches of shelf space, compared with only 18 inches for 1957. In contrast, the Engineering Index, which is more selective, has been maintaining an annual 3-inch thickness for many years through 1962. In 1963 it split into 2 volumes. By 1967 the two volumes totalled 6 inches.

e. If only the more important or more general articles are desired, a more general index will be adequate. But general indexes should also be searched for special subjects, in combination with specialized indexes, since articles of special interest do appear in many of the journals covered by general indexes.

In addition to coverage and overlap, one must consider time lag from the time information is published in a journal until it is indexed in an indexing or abstracting service. This may vary from three months to three years. To determine the extent of the time lag, it is important to scan new issues of indexing journals to determine the dates of the articles that are indexed. If very current information is wanted, one must go directly to the journals likely to contain pertinent articles, since articles in very recent journal issues will not yet be included in the indexes.

In the introductory statement we indicated that indexing journals can give bibliographic citations with or without abstracts or summaries of the contents of the articles. Those without abstracts have limited value, since the only description is the title itself. Abstracts may merely indicate what articles are about, or they may be more informative, giving specific important details and/or data. Some indexing services go even further by providing extensive summaries or digests of the articles and critical evaluations of methods or results.

The sole purpose of an abstract is to allow a searcher to make an accurate determination of the value of an article for his needs. A good abstract will enable him to either accept and use the information and go no further, decide he needs the entire article for further information, or reject the article as not being pertinent. A poor abstract may lead him to reject an article that is actually pertinent; if he accepts an article on the basis of a poor abstract, he will discover the error as soon as he scans the entire article. It is, therefore, necessary for the searcher to be aware of the quality of the abstracting or indexing service.

Before beginning a search for articles on a subject that you are not familiar with, it is helpful to seek out a general introduction to the subject. A good textbook, handbook, encyclopedia, or similar source can often give you a quick overview of the subject and

indicate the special relation of the specific subject to a more general subject. This preliminary orientation will also help you to recognize the subject's special vocabulary, the origin and applications of the subject, and its best-known authors, as well as other pertinent information. For example, if you can determine the approximate date when a new subject was first developed or likely to have been written about, you can limit your search to indexes that were prepared after that date.

The goal in studying examples of indexes in this course is to learn how to go about becoming thoroughly and quickly familiar with any index. What are the points to consider and how can you best find out? There are several basic features that one must learn about each index in order to make the best use of it:

1. Basic arrangement--alphabetical, topical, classified (Dewey, LC, etc.).
2. Number and kinds of journals covered.
3. Scope of subject area included, including topical emphasis and point of view.
4. Depth of indexing. General terms vs. very specific terms.
5. Duplication of indexing under more than one term or entry.
6. Inclusion of abstracts. If yes, how specific and informative are they?

7. Up-to-dateness of coverage, or time lag.
8. Frequency of issue and frequency of cumulation.
9. Indexes other than main approach, such as specific alphabetical subject-term index to a classified or topical arrangement, or author index, etc.
10. Consistency of the indexing. Will you always find the same subjects under the same indexing terms?
11. Does the indexing vocabulary change to reflect current terminology?
12. Cross references, both "see" and "see also," from one topic to another.
13. Any other special features, such as coverage of foreign publications, lists of abbreviations, lists of journals covered, etc.

Here are some general procedures to establish familiarity with a new index:

1. Read the introduction and any associated material describing the coverage, indexing features, abbreviations, etc.
2. Check for time lag by seeing how recent the references are.
3. See if vocabulary or indexing terms are readily understood or if you may need a dictionary specialized in that area.

4. Take some examples of indexing entries and citations and make sure you understand all the notations and abbreviations. If you don't, find a list of abbreviations, perhaps in the first issue or an annual issue.
5. Is there a list of journals and other sources indexed? Is this list added to in subsequent issues? How often is the complete list published?
6. Check the basic features mentioned above, so that your basic knowledge of the index will become clear and almost second-nature.

Certain techniques are useful in conducting any literature search, in addition to the more general procedures mentioned above.

1. If you don't find material under the first word you look up, follow cross references, if any, or try to think of another term under which material might be found.
2. If you are still having difficulty in finding the correct subject term, go to a special dictionary, which will define the subject and give you a better idea of related terms and subject fields.
3. If you are uncertain about the possible value of an article, look to see how many pages it has and if there is any mention of additional references

in the article. A 20-page article is likely to be more informative than a two-page article, and a four-page article with a bibliography listing 20 references may be better than a seven-page article without any references.

4. Look for clues as to fields of application, related or more specific subjects, journals that seem to specialize in articles on the subject, new journals in the field, references to conferences on the subject, new terminology in recent references. If you can store this kind of information in the back of your mind, it will be easier for you to conduct a literature search at a later date, when this subject comes up again.
5. If you already have an article on the subject in question, look up the author in the author index and find how that article is indexed by subject. This may help you to locate the proper subject terms to use.

We will take two indexes as examples and try out some of these learning techniques with them. These are Engineering Index and Science Abstracts, both of which are broad-coverage services available in many libraries. Figure 2 on the next page illustrates the contents pages from Engineering Index and Physics Abstracts. Physics Abstracts is Section A of Science Abstracts. We shall be giving you instruction in this tool, but first let us look at Engineering Index.

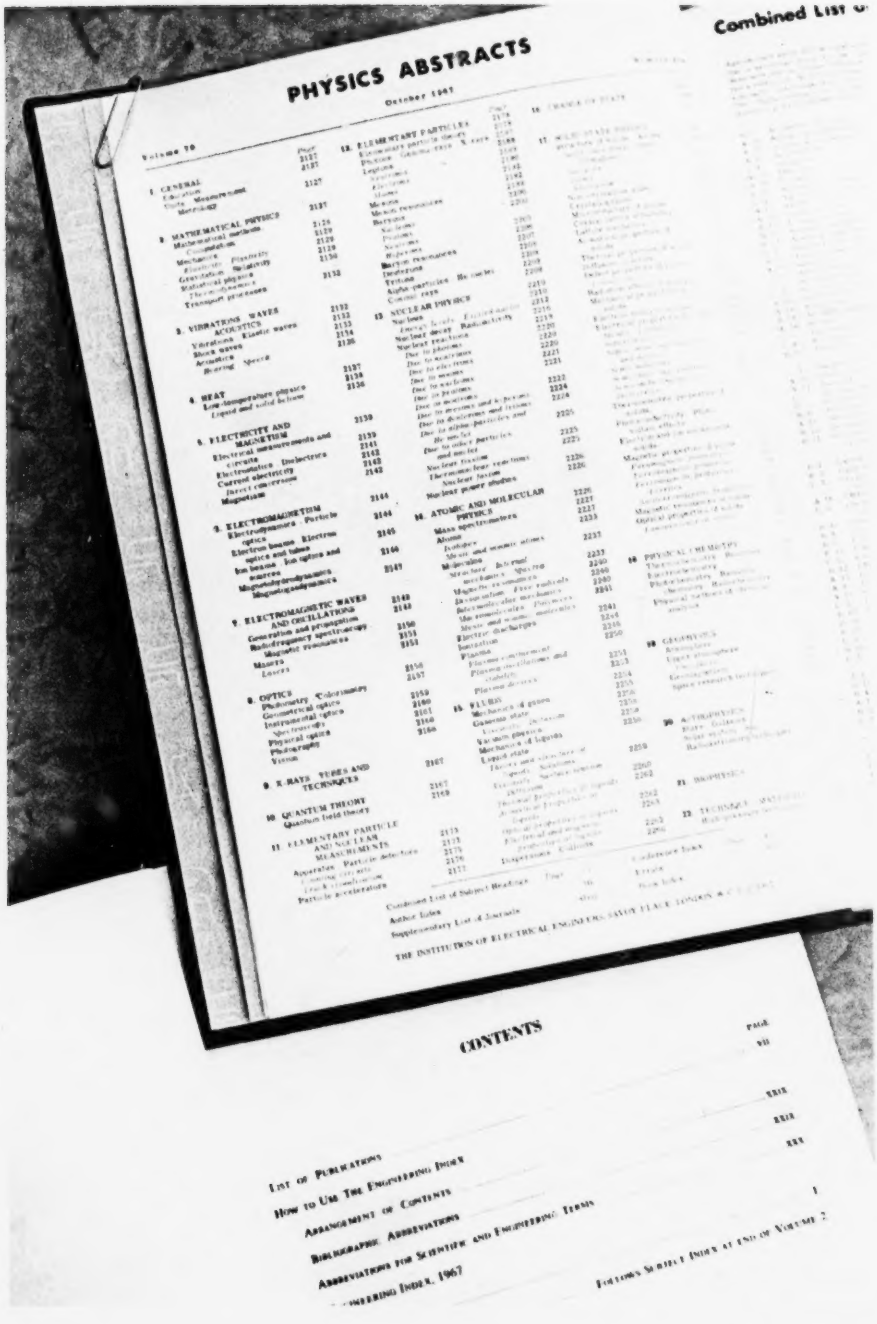
PHYSICS ABSTRACTS
October 1967
Volume 70
CONTENTS
List of Publications
How to Use The Engineering Index
Arrangement of Contents
Bibliographic Abbreviations
Abbreviations for Scientific and Engineering Terms
Engineering Index, 1967

Figure 2

Here are some facts about Engineering Index (EI) that you should keep in mind in using it.

Engineering Index is issued monthly, with an annual cumulation. The time lag is considerable. The most recent references in monthly issues are at least three months old, and the monthly issue itself is received in a library at least one month after the date of the issue. The annual volumes for a calendar year are not received until August of the following year. This means that there are 18 individual monthly issues before the annual volumes arrive. The most recent references in the annual volumes are at least 11 months old by the time a library receives the volumes. Many references are three years old. Therefore, in searching EI for material that you believe was published in a certain year, you might need to search through the indexes for that year and at least two subsequent years.

Engineering Index is a subject index to abstracts of articles on engineering and technology. Some of the topics covered are only loosely related to engineering. EI abstracts conferences, symposia, books and reports as well as articles appearing in journals. It has an author index that refers to a page number only--thus it is necessary to scan an entire page to find the correct article.

Stop here and examine the Engineering Index. The next unit of instruction will give you some practice in using the Index.

Answers

1. Abstracting services provide means of knowing the contents of thousands of periodicals and other serial publications through author and subject indexes, and through indicating or summarizing the substance of the articles contained in the periodicals. The abstracts are very useful for helping you decide whether or not you need to see the articles themselves.

2. Abstracts may be indicative of the content or informative in the sense of summarizing the content. See page 11 of this instruction.

3. Applied Science and Technology Index covers only a selected few English language scientific and technical periodicals and provides access by subject without indicative or informative abstracts. Engineering Index covers a much broader range of serials and provides abstracting information.

4. Science Abstracts for the past several years has been arranged by its own system of classified subject categories. In earlier years it was arranged by the categories of the Universal Decimal Classification. This is important to know if a retrospective search is required for the period, say, of 1945 to date.

5. A good first source would be Engineering Index because of its broad coverage and abstracting information. Applied Science and Technology Index is useful for identifying material in the most widely available periodicals in U.S. libraries. Where available, a more specialized service is APCA abstracts, published by the Air Pollution Control Association.

6. There are many ways in which abstracting services present their abstracts in their publications. Two of the most common are, an alphabetic arrangement by subject name (as in Engineering Index) and, arrangement by a subject classification system (as in Science Abstracts).

7. Some useful supplementary indexes include author indexes, detailed subject indexes (particularly for classified arrangements), numerical indexes (for report series and contract numbers), formula and patent indexes.

8. Engineering Index covers a much broader spectrum of subject matter and is arranged alphabetically by broad subject. Science Abstracts is a specialized group of three services each covering a particular subject area, that is arranged by a unique subject classification.

9. The time lag for a given service may range from a month to three years. It is important to know what the characteristic delay is for the services you are using.

10. There are a number of useful clues other than the content of the abstract that can help you judge the value of a given article description. These include, the number of pages (how long is it), the author's name (is he well known or not), the kind of journal in which the article appeared (popular, scientific, trade publication), the date of publication (how recent, how old), the language of the article (if not English, can you use it or locate a translation), the availability of the publication (do you have it, can you borrow it or obtain a copy in good time).

11. a. weekly
    b. monthly
    c. monthly
    d. semimonthly

12. The sections of Science Abstracts include:

    Section A Physics Abstracts,

    Section B Electrical and Electronic Abstracts,

    Section C Control Abstracts.

This concludes this unit of instruction. The two units that should be studied next are entitled, "Using Engineering Index," and "Introduction to Science Abstracts."

Engineering Index

USING

ENGINEERING INDEX

The following exercises are to be done by consulting the 1967 volumes of Engineering Index. Whenever the phrase "find an article" is used, this means find a reference to an article and give the title, first-named author, and bibliographic citation as you find it (for example, Underwater acoustic camera. R. W. G. Haslett. Acustica v 17 n 4 1966 p 187-203).

1. Does Engineering Index include papers given at some conferences and symposia?_____ How do you know this?_____

_____

2. Where can one obtain copies of the articles cited?_____

_____

3. What is the full name of a journal cited as "Instn Elec Engrs - Proc"?_____

_____

3a. How did you determine this?_____

_____

4. Find an article on lighting of libraries.

_____

_____

5. Does the abstract give a lot of data?_____

6. Find an article by T. Okada on plastics.

_____

_____

Give two reasons why you think this would be a good article to obtain for further details.

_____

_____

_____

7. Find a recent article on lunar television cameras.

_____

_____

What is the full name of the journal?_____

_____

8. What publications series from the University of California are indexed?_____

_____

_____

9. Where is the magazine Machinery published?

_____

_____

10. What is the name of a magazine from Prague, Czechoslovakia, that is indexed by Engineering Index?_____

_____

11. Look at references under FLUID AMPLIFIERS.
    a. What is the earliest reference (bibliographic citation) you can find?_____

    _____

    b. What is the most recent reference (bibliographic citation) you can find?_____

    _____

c. Find an article in French._____

_____

_____

d. Find an article containing an extensive bibliography on the subject it discusses.

_____

_____

_____

e. Find a reference to a paper presented at the Joint Automatic Control Conference in Seattle, 1966._____

_____

f. Find an article with the title "Understanding Fluidics."_____

_____

g. Name two other subject index terms under which there are references on fluidics.

_____

_____

h. Find an article by W. K. Clark on fluidics.

_____

_____

Did you use the author index to find this?

_____

i. Name a magazine title that has at least three articles on this same subject._____

_____

_____

Stop here. The next unit of instruction will introduce you to Science Abstracts.

Science Abstracts

1

INTRODUCTION

TO

SCIENCE ABSTRACTS

Before going on with this unit, you may find it useful to review the list of basic features and procedures to note and use in learning about any index given on pages 12-14 in Introduction to Serials Indexing and Abstracting Services

Science Abstracts is published in three sections: A, Physics Abstracts, B, Electrical and Electronics Abstracts, and C, Control Abstracts. Each section is issued monthly, and each section has two semi-annual author and subject indexes. The time lag is often more than a year because of the extensive coverage of foreign publications.

The arrangement is by subject categories, according to a classification system worked out by the publisher. Each issue also includes an outline of the classification system, an alphabetical list of subject headings used in Science Abstracts, with references, by code, to the particular series and "chapter" (major category) in which that subject is included.

Once a year, in the author index, a list is published of the journals and reports to which references are made. There is also a list of the journals that are abstracted completely, as well as a list of books and conference proceedings that were abstracted. These lists are supplemented in the monthly issues, which also contain an author index.

There are a number of differences between Engineering Index and Science Abstracts.

Engineering Index	Science Abstracts
Approach is alphabetically by subject heading. Related material is scattered.	Approach is by classified subject categories. This tends to being related material together.
More general coverage, since engineering is an applied science based on several fundamental sciences.	More specific coverage, since it focuses on specific sciences.
One annual cumulation, plus current monthly issues.	No annual cumulation. If approach is by subject categories, you must look in twelve issues per year. Even if you use the semi-annual subject index, the references will be scattered in up to six issues, or twelve issues for the year.
In general covers English-language journals of a technical nature.	In general covers world-wide literature of a scientific and scholarly nature.

Engineering Index	Science Abstracts
Abstracts are brief and more descriptive, and can generally be understood by a non-specialist.	Abstracts are longer and contain considerable technical data which may be difficult for non-specialists to interpret.
There are more subject headings for pinpointing specific subjects. Also, each subject heading appears with the references and abstracts, thus helping to define the subject.	The classified approach requires some knowledge of the subject fields. The number of subject headings is limited. To make sure what a heading means, one must turn to the pages where the abstracts appear.
Abstracts are anonymous.	Some abstracts are signed.

Using Physics Abstracts

The following exercises are intended to provide some familiarity and learning experience with one of the sections of Science Abstracts. Use the June 1968 issue and the Author Index, January-June 1968, of Section A, Physics Abstracts.

If the entire issues are not available, obtain copies of the following pages, June 1968 issue: Inside front cover, Combined List of Subject Headings (2 pages); pages lvii, 1506, 1516-1520, 1534, 1539, 1666, 1667, 1740, 1751, 1771. Author Index, January-June 1968: A1, A283, A284, B1, C1.

1. What is the meaning of the number 8 following all author entries in the author index?
2. Find an article by S. Tanaka that he wrote without any other author.
3. Find the reference number for a review of the book: "Annual Review of Nuclear Science," vol. 15, edited by E. Segre.
4. On what pages in the June issue is there material on the solar system?
5. Find an article by Yu and Young.
6. What is the full title of a journal listed as Avtomat. Vychislit. Tekh.

7. Who is the publisher of the Conference Record of the Sixth Photovoltaics Specialists Conference, Cocoa Beach, Florida, 1967, vol. 3?
8. Find an article on heat transfer in laminar flow of incompressible liquid in a circular tube.
9. Give two specific subject category numbers of material on dielectrics.
10. What is the current title of a magazine formerly known as Revue Technique Companie Francaise Thomson-Houston?
11. In the June issue look in section on "Heat."
    a. Find an article dated 1965.
    b. What is the arrangement of articles under this category?
    c. Find an article appearing in a Dutch journal.
    d. Find an American journal that has two or more articles on heat.
    e. What is the title of the journal containing the English translation of articles from Inzhen. Fiz. Zh.
12. Give the authors of two papers presented at the Seventeenth Electronic Components Conference, Jackson, 1967.

As a further exercise, review again the list of basic features and procedures on pages 12-14 in Introduction to Serials Indexing and Abstracting Services and, using these guides, familiarize yourself with the Applied Science and Technology Index.

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REFERENCE TOOLS and SERVICES

Reports Indexing and Abstracting Services

On-The-Job Training of Library Personnel

Produced under contract
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INTRODUCTION TO REPORTS INDEXING

and

ABSTRACTING SERVICES

For specialists and research workers in science and technology, technical reports are considered as important as journal articles and informal communication with colleagues as sources of up-to-date information.

The ability to use indexes to the report literature is important because:

- Much technically important, new information appears only in the report literature, or appears first in the report literature.
- The volume of new technical reports is increasing as rapidly or more rapidly than the volume of new journals and new books.
- The skill and knowledge of the reference worker is much more important in technical report searching than in journal searching.

Technical reports are publications that describe or give the results of scientific or technical research. Since World War II, much of this research has been funded, directly or indirectly, by the United States Government. Researchers at universities, private corporations, or societies who receive grants or contracts are required to submit progress and final reports of their projects. These reports are then made available to other researchers.

Not all technical reports appear as "typical" research reports. Some appear as proceedings, annual reports, bibliographies or indexes. Technical reports may range in size from several pages to several volumes.

To think about the range of information needs served by reference work in the technical report literature, let's look at a small sample that reflects the kinds of questions that are likely to be heard across the reference desk.

. "My development project is concerned with _____ and I want all the pertinent stuff for the last two years on it."

. "I need to know if anyone has recently solved the technical problem of _____."

. "I'm in a hurry for a copy of a report titled _____, from _____ corporation; it's number was _____. Can I get it here, and if not, where, and how soon?"

. "I heard at lunch about a project on _____ funded by _____, and being done by _____ company. Can you get me information on it?"

. "Is there a bibliography already in existence on _____? Where can I get it if so?"

. "Who has worked on project _____ under contract number _____? What companies, people, agencies?"

. "How can I find all the documentation on project _____?"

. "We want to purge documents from project _____ from our files and from our reference system, will you attend to it?"

As you can see from the sample questions, there are three main kinds of jobs that require knowledge of the technical report literature and its searching tools. These are:

1. Finding the citations of reports and report series that fit requests for certain kinds of information. This can be called identification.

2. Determining the availability and location of reports for which the citations are provided. This can be called locating.

3. Attending to all the details that are required to physically remove some kinds of documents, and to delete their records from the various searching systems. This can be called purging.

CHARACTERISTICS OF TECHNICAL REPORTS AND TECHNICAL REPORTS INDEXES

Indexes often reflect the peculiarities of the body of literature they access. Thus, once the reference worker acquires the basic knowledge of technical reports, he should be able to reshape or manipulate reference requests so that they can be answered with existing tools.

Now let's look at what we know about technical reports.

1. Report literature is project-oriented not subject-oriented.

   Project workers and project sponsors are interested in making a record of project activities and results. They are not usually concerned with sorting project activities exactly according to subject.

2. Research projects are required to produce interim reports at regular (quarterly, etc.) intervals and a final report at the conclusion of the project.

   The report indexes may seem to indicate that a large volume of research has been done on a particular topic when, in fact, all the reports listed have resulted from the same piece of research. Further, a final report is often a summing up of the interim reports that preceded it.

3. Report titles are usually very specific and descriptive of the research project they represent.

   Research projects have limited, specific objectives that the investigator expects to accomplish within an agreed-upon time. Good titles help the library staff and the user to identify projects of special interest to them.

4. Schemes for numbering reports are numerous, varied, and sometimes inconsistent.

   Each university, corporation, agency, or other institution that receives grants or contracts to fund research projects, and that then issues technical reports of progress, assigns an identifying code and document number to each report. This code is usually

an alphabetic prefix that is some sort of contraction or acronym based on the organization's name. Examples are:

UCRL	University of California Radiation Laboratory
AMMRC	Army Materials and Mechanics Research Center
IITRI	Illinois Institute of Technology Research Institute

The Special Libraries Association has published a Dictionary of Report Serials Codes, which identifies the issuing organization of the various alphabetic prefixes used in technical report series. You can use this dictionary to find the full name of an organization when only the report series code is known, or to find the code or codes used by a particular issuing organization. Since different companies, sponsoring agencies, and dissemination services may all have different schemes for numbering the same reports, some reports may have many different identifying numbers assigned to them.

Numbering systems often get changed in "mid-stream." Early reports from a company, agency, or dissemination system may have to be searched under one numbering system, later reports under another. Some of these reports can be located and ordered under either number while some can only be found under the latest number. Similarly, when the name of a corporation or agency changes, report publication practices often change. These changes cause cataloging problems that are reflected in the report indexes.

5. The contents of reports are often in detailed, specialized language rather than in more general, easily indexed terms, and the more general categories are not referred to in the reports.

This makes it difficult for the reference worker to "translate" from the specialized terms to the general categories unless he is technically well versed in the knowledge being used on the particular project. That is, a user may intentionally ask a question in general subject terms so that the search will include all the specific topics that are a part of that subject area. If he asks too specific a question, the search may be exclusive--it will exclude some topics that are related to the question. One solution is to have reference workers who are very knowledgeable in the subject matter so that they can make these special-to-general decisions. Another solution is to have the user always "spell out" the specialized terms, instances, and contents that would be included in the more general categories used in his request. A third is to have the indexing services index the report literature using technically trained persons who convert the specialized research language to general indexing terms to facilitate searching. Sometimes none of these alternatives is possible.

6. The document indexing and dissemination services for technical reports do not have uniformity in their various practices.

There are several alternative indexing services and supply channels for searching and obtaining technical reports. Some of these services index reports quickly, others delay a long time. Some provide in-depth coverage in a subject area,

others do not. Most provide multiple access points for getting any particular report--report numbers,(several kinds), authors names, corporate authors, subjects, etc. Incomplete coverage, incomplete indexing, and inconsistency in the use of subject terms, make searching a tedious job. The solution to this problem is knowledge. The reference worker must acquaint himself with the delay times, coverages, vocabulary, and entry types for each dissemination service available in his library so that he is better able to choose among them each time a question about technical reports is received. Figure 1 shows some of the features of three major technical-report abstracting and indexing services.

Now we will look at one announcement and indexing services in some detail.

U. S. Government Research and Development Reports (USGRDR)

U. S. Government Research and Development Reports in published by the Clearinghouse for Federal Scientific and Technical Information (commonly referred to as The Clearinghouse" or as CFSTI), a unit within the Department of Commerce. CFSTI collects, announces, and redistributes reports from Federal agencies. A major portion of the CFSTI collection is the report literature from the Defense Documentation Center (DDC), which consists of unclassified reports from military organizations and defense contractors. In addition, the Clearinghouse handles the report literature from National Aeronautics and Space Administration (NASA), the Atomic Energy Commission (AEC) and more than 50 other Federal agencies.

	FREQUENCY	CUMULATIVE INDEXES	PUBLISHER	SOURCE OF REPORTS INCLUDED	OTHER ITEMS ANNOUNCED
U. S. Government Research and Development Reports (USGRDR)	Abstracts Issue - semimonthly Index Issue - semimonthly	. Quarterly	CFSTI	. Defense Documentation Center (DDC) . Atomic Energy Commission (AEC) . National Aeronautics and Space Administration (NASA) . 50 Federal agencies . Federally-funded projects	Special Bibliographies Special Services
Nuclear Science Abstracts (NSA)	semimonthly	. Quarterly . 5-year	AEC	. AEC contractors . other Federal agencies . other Governments, universities, etc. . covers the international literature on nuclear science and technology	. Patents . Books . Periodical articles
Scientific & Technical Aerospace Reports (STAR)	semimonthly	. Quarterly . semi-annual . annual	NASA	. International report literature on space and aeronautics	. Periodical articles by NASA and contractor authors . Special Services

Figure 1. Features of three major technical reports abstracting and indexing services

Only those scientific, technical, and engineering reports resulting from Federally funded projects are collected. The Clearinghouse collection, dating back to 1946, contains more than 520,000 report titles and is increasing at the rate of approximately 50,000 titles per year.

USGRDR is the basic Clearinghouse publication. It is an abstract journal issued twice each month that announces publicly available reports of research and development projects sponsored by the U.S. Government. Reports from AEC, Department of Defense (DOD), and NASA are included, as are U.S. Government-sponsored translations and some foreign reports written in English. The Index to USGRDR is sold as a separate subscription but appears simultaneously on the same dates (the 10th and 25th of each month) as the abstract issue. Each issue of USGRDR is indexed by subject, personal author, corporate author, contract/grant number, and accession/report number. In addition to the regular, semimonthly index issues, the Clearinghouse publishes quarterly and annual cumulative indexes. These cumulations are also priced separately.

All issues of USGRDR are arranged in the same way. Reports are grouped in twenty-two subject categories or "fields." Each field is divided into subcategories, or "groups." These subject fields and groups are shown in Figure 2. Document abstracts in USGRDR are arranged under their respective subject groups in alphabetical order by title.

A typical entry in the journal includes the title of the report, basic bibliographic information, descriptive (index) terms, an abstract (in most cases), the accession number and price. Figure 3 shows two pages from the USGRDR issue of August 25, 1968. Examine

SUBJECT FIELD AND GROUP STRUCTURE

(Use Edge Index on back cover to locate subject Field in the journal)

FIELD 1. AERONAUTICS
Includes the following Groups: Aerodynamics; Aeronautics; Aircraft; Aircraft Flight Control and Instrumentation; Air Facilities.

FIELD 2. AGRICULTURE
Includes the following Groups: Agricultural Chemistry; Agricultural Economics; Agricultural Engineering; Agronomy and Horticulture; Animal Husbandry; Forestry.

FIELD 3. ASTRONOMY AND ASTROPHYSICS
Includes the following Groups: Astronomy; Astrophysics; Celestial Mechanics.

FIELD 4. ATMOSPHERIC SCIENCES
Includes the following Groups: Atmospheric Physics; Meteorology.

FIELD 5. BEHAVIORAL AND SOCIAL SCIENCES
Includes the following Groups: Administration and Management; Documentation and Information Technology; Economics; History, Law, and Political Science; Human Factors Engineering; Humanities; Linguistics; Man-machine Relations; Personnel Selection, Training, and Evaluation; Psychology (Individual and Group Behavior); Sociology.

FIELD 6. BIOLOGICAL AND MEDICAL SCIENCES
Includes the following Groups: Biochemistry; Bioengineering; Biology; Bionics; Clinical Medicine; Environmental Biology; Escape, Rescue, and Survival; Food, Hygiene and Sanitation; Industrial (Occupational) Medicine; Life Support; Medical and Hospital Equipment; Microbiology; Personnel Selection and Maintenance (Medical); Pharmacology; Physiology; Protective Equipment; Radiobiology; Stress Physiology; Toxicology; Weapon Effects.

FIELD 7. CHEMISTRY
Includes the following Groups: Chemical Engineering; Inorganic Chemistry; Organic Chemistry; Physical Chemistry, Radio and Radiation Chemistry.

FIELD 8. EARTH SCIENCES AND OCEANOGRAPHY
Includes the following Groups: Biological Oceanography; Cartography; Dynamic Oceanography; Geochemistry; Geodesy; Geography; Geology and Mineralogy; Hydrology and Limnology; Mining Engineering; Physical Oceanography; Seismology; Snow, Ice, and Permafrost; Soil Mechanics; Terrestrial Magnetism.

FIELD 9. ELECTRONICS AND ELECTRICAL ENGINEERING
Includes the following Groups: Components; Computers; Electronic and Electrical Engineering; Information Theory; Subsystems; and Telemetry.

FIELD 10. ENERGY CONVERSION (Non-propulsive)
Includes the following Groups: Conversion Techniques; Power Sources; Energy Storage.

FIELD 11. MATERIALS
Includes the following Groups: Adhesives and Seals; Ceramics, Refractories, and Glasses; Coatings, Colorants, and Finishes; Composite Materials; Fibers and Textiles; Metallurgy and Metallography; Miscellaneous Materials; Oils, Lubricants, and Hydraulic Fluids; Plastics; Rubbers; Solvents, Cleaners, and Abrasives; Wood and Paper Products.

FIELD 12. MATHEMATICAL SCIENCES
Includes the following Groups: Mathematics and Statistics; Operations Research.

Figure 2 (sheet one) Subject fields

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Figure 2 (sheet one) Subject fields

FIELD 13. MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING

Includes the following Groups: Air Conditioning, Heating, Lighting, and Ventilating; Civil Engineering; Construction Equipment, Materials, and Supplies; Containers and Packaging; Couplings, Fittings, Fasteners, and Joints; Ground Transportation Equipment; Hydraulic and Pneumatic Equipment; Industrial Processes; Machinery and Tools; Marine Engineering; Pumps, Filters, Pipes, Fittings, Tubing, and Valves; Safety Engineering; Structural Engineering.

FIELD 14. METHODS AND EQUIPMENT

Includes the following Groups: Cost Effectiveness; Laboratories, Test Facilities, and Test Equipment; Recording Devices; Reliability; Reprography.

FIELD 15. MILITARY SCIENCES

Includes the following Groups: Antisubmarine Warfare; Chemical, Biological, and Radiological Warfare; Defense; Intelligence; Logistics; Nuclear Warfare; Operations, Strategy, and Tactics.

FIELD 16. MISSILE TECHNOLOGY

Includes the following Groups: Missile Launching and Ground Support; Missile Trajectories; Missile Warheads and Fuses; Missiles.

FIELD. 17. NAVIGATION, COMMUNICATIONS, DETECTION, AND COUNTERMEASURES

Includes the following Groups: Acoustic Detection; Communications; Direction Finding; Electromagnetic and Acoustic Countermeasures; Infrared and Ultraviolet Detection; Magnetic Detection; Navigation and Guidance; Optical Detection; Radar Detection; Seismic Detection.

FIELD 18. NUCLEAR SCIENCE AND TECHNOLOGY

Includes the following Groups: Fusion Devices (Thermonuclear); Isotopes; Nuclear Explosions; Nuclear Instrumentation; Nuclear Power Plants; Radiation Shielding and Protection; Radioactive Wastes and Fission Products; Radioactivity; Reactor Engineering and Operation; Reactor Materials; Reactor Physics; Reactors (Power); Reactors (Non-power); SNAP Technology.

FIELD 19. ORDNANCE

Includes the following Groups: Ammunition, Explosives, and Pyrotechnics; Bombs; Combat Vehicles; Explosions, Ballistics, and Armor; Fire Control and Bombing Systems; Guns; Rockets; Underwater Ordnance.

FIELD 20. PHYSICS

Includes the following Groups: Acoustics; Crystallography; Electricity and Magnetism; Fluid Mechanics; Masers and Lasers; Optics; Particle Accelerators; Particle Physics; Plasma Physics; Quantum Theory, Solid Mechanics; Solid-state Physics; Thermodynamics; Wave Propagation.

FIELD 21. PROPULSION AND FUELS

Includes the following Groups: Air-breathing Engines; Combustion and Ignition; Electric Propulsion; Fuels; Jet and Gas Turbine Engines; Nuclear Propulsion; Reciprocating Engines; Rocket Motors and Engines; Rocket Propellants.

FIELD 22. SPACE TECHNOLOGY

Includes the following Groups: Astronautics; Spacecraft; Spacecraft Trajectories and Reentry; Spacecraft Launch Vehicles and Ground Support.

Figure 2 (sheet two) Subject Fields

THE LOGISTICS COMPOSITE MODEL: AN OVERALL VIEW,
Rand Corp Santa Monica Calif
R. R. Fisher, W. W. Drake, J. J. Delfausse, A. J. Clark, and A. L. Buchanan. May 68, 112p Rept no. RM-5544-PR
Contract F44620-67-C-0045

Descriptors: (*Air Force operations, Logistics), (*Logistics, *Computer programs), Mathematical models, Maintenance, Digital computers, Air Force equipment, Military facilities, Landing fields, Aircraft, Interactions, Sequences, Decision making, Flow charting.
Identifiers: PACER SORT project, L-COM computer program.

A description of the Logistics Composite Model (L-COM), a computer model developed to simulate the overall operations and support functions at an Air Force base. L-COM consists of three main programs: a preprocessor, a simulation program, and a postprocessor. The model replicates the flying of aircraft; accomplishment of servicing tasks, incurrence of malfunctions; flight-line maintenance; repair of components in base repair shops the utilization and interaction of resources in the demand process; and the changes in resource availability according to shift policies. L-COM has two unique features: (1) a task network that describes base processes to be simulated by identifying particular tasks and the sequence for accomplishing them; and (2) embedded decision routines that help determine a best mix of resources to support a prescribed flying program. The model requires a computer with an internal memory of at least 65,000 words of 36-bit length or equivalent. A typical problem requires from 1 1/2 to 2 minutes of computer time to simulate a day's worth of base operations involving 1500 tasks. Since L-COM is written in SIMSCRIPT, almost any computer of sufficient size may be used. (Author)
AD-671 112 HC$3.00 MF$0.65

PRELIMINARY DESIGN AND TEST OF LINEAR INDUCTION TRACTION MOTORS AND SUSPENSION SYSTEMS,
Massachusetts Inst. of Tech., Cambridge. Engineering Projects Lab.
Dwight M. Baumann, and G. B. Kirby Meacham. 1 Nov 66, 47p* DSR-6106-3
Contract C-85-65

Descriptors: (*Transportation, *Induction motors), Electric motors, Passenger vehicles, Ground speed, Magnetic properties, Brakes, Models (Simulations), Design, Dynamometers, Mathematical models, Advanced planning, Research program administration.
Identifiers: Tradeoffs, Linear motors.

The report presents some very preliminary calculations and experiments investigating linear induction motors for high speed ground transportation. An iron field slotted rotor configuration is proposed for improved performance. The possibility of combined magnetic suspension and propulsion are discussed and found to require pole pieces that are on the order of weight of the vehicle. (Author)
PB-173 686 HC$3.00 MF$0.65

15F. Nuclear Warfare

ON REORGANIZING AFTER NUCLEAR ATTACK,
Rand Corp Santa Monica Calif
William M. Brown. Jan 68, 26p Rept no. P-3764

Descriptors: (*Nuclear warfare, Recovery), Civil defense systems, Cost effectiveness, Survival, Vulnerability, Predictions, Management planning, Population, Reaction (Psychology), Behavior, Economics, Starvation.
Identifiers: Postattack operations.

Even though a major fraction of the physical resources survive a nuclear attack, the economic viability of the country is not assured. For want of an effective understanding of the needs of the postattack reorganization period, the country could experience economic 'starvation in the midst of plenty.' The purpose of preplanning for a Civil Defense mobilization is to enable it to proceed rapidly and effectively at the time it is needed. Thus, if the preparations are satisfactory the efforts which would promote the subsequent postattack recovery could reasonably be balanced and thereby not only make the recovery more likely but more rapid. (Author)
AD-670 829 HC$3.00 MF$0.65

15G. Operations, Strategy, AND Tactics

PREFERENTIAL STRATEGIES,
Analytic Services, Inc., Falls Church, Va.
J. D. Matheson. May 66, 45p AR-66-2
Contract AF 49 (638)-1259

Descriptors: (*Weapon systems, Kill probabilities), (*Game theory, *Strategic warfare), Probability, Deployment, Enemy personnel, Operations research, Vulnerability, Warfare, Defense systems, Research program administration, Mathematical models.
Identifiers: Targeting.

A discussion is presented on targeting strategies for attack and defense. Weapons with unit probability of kill are pre-allocated by each combatant, who knows the enemy's total force size but not his weapon allocation. Canonical minimax solutions are formulated for all integral numbers of targets and weapons. In general, multilevel strategies are preferable to uniform strategies. (Author)
AD-483 249 HC$3.00 MF$0.65

ON AN ATTACK-DEFENSE GAME WITH TARGETS.
Washington Univ Seattle Lab of Statistical Research
For primary bibliographic entry see Field 12B.
AD-670 564 HC$3.00 MF$0.65

THE POLICE FUNCTION IN STABILITY OPERATIONS,
Institute for Defense Analyses Arlington Va Science and Technology Div
Joseph F. Coates. May 68, 22p Rept no. TN-547
IDA/HQ-68-8674
Contract DAHC15-67-C-0011

Descriptors: (*Counterinsurgency, Stabilization), Political science, Military police, Behavior, Military psychology, Reaction (Psychology), Culture, Interactions, Threat evaluation, Economics, Motivation, Vulnerability, Countermeasures, Military law, United States Government, Communists, Reasoning.
Identifiers: Infiltration, Subversion.

Stability operations present complex problems and conflicting objectives in an uncertain environment. This paper discusses some of the problems intrinsic to these situations which may result from cross-cultural misunderstanding, and a drive to transfer proven formulae unchanged. Several problem areas meriting further study are suggested. (Author)
AD-670 648 HC$3.00 MF$0.65

THE INVESTIGATION OF PROBABILISTIC INTERCEPT PROBLEMS USING A DIGITALLY CONTROLLED ANALOG COMPUTER.
Technical memo.,
Pennsylvania State Univ University Park Ordnance Research Lab
J. B. Ross. 9 Oct 67, 134p Rept no. TM-215.2221-03
Contract NOw-65-0123

Descriptors: (*Interception probabilities, *Analog computers), Mathematical models, Maneuverability, Proportional navigation, Guidance, Intercept trajectories, Sampling, Analog-digital computers, Simulation, Targets, Diagrams, Theses.
Identifiers: Computer simulation.

The paper concerns the development of a computer model of a general probabilistic intercept problem. The model facilitates the study of the performance of intercept systems of the type that may be used to guide an object into coincidence with a target that is capable of performing random maneuvers about a deterministic path. The class of intercept systems that may be handled consists of those systems that use proportioned navigation guidance methods. The guidance systems may be of the sampled data type. The model developed involves the two-dimensional simulation of the trajectories of a target and an interceptor. The simulation is performed on a digitally controlled high speed analog computer. For a given intercept system configuration, the problem is cycled through a prescribed number of intercept attempts or runs. The frequency of success from the number of runs provides an estimate of the probability of object coincidence. This process is repeated for different system parameter values and the resulting index of performance curve (probably of coincidence) is analyzed to determine the desired intercept system configuration. (Author)
AD-670 725 HC$3.00 MF$0.65

DEPARTMENT OF DEFENSE LAND MANAGEMENT,
Institute for Defense Analyses Arlington Va Program Analysis Div
For primary bibliographic entry see Field 5C.
AD-670 736 HC$3.00 MF$0.65

DYNAMIC RESPONSE OF THE XC-142A TILT-WING V/STOL AIRCRAFT TO IN-FLIGHT CARGO DELIVERY AT SLOW SPEEDS.
LTV Aerospace Corp Dallas Tex LTV Vought Aeronautics Div
For primary bibliographic entry see Field 1C.
AD-670 965 HC$3.00 MF$0.65

PRELIMINARY INVESTIGATION OF BALLUTE-FLEXIBLE ROTOR CONCEPT FOR LOW-ALTITUDE CARGO AIRDROP.
Goodyear Aerospace Corp Akron Ohio
For primary bibliographic entry see Field 1C.
AD-670 984 HC$3.00 MF$0.65

AN ANNOTATED BIBLIOGRAPHY ON PRISONER INTERROGATION, COMPLIANCE AND RESISTANCE,
Bureau of Social Science Research Inc Washington D C
Albert D. Biderman. Aug 63, 30p AFOSR-68-1406

Contract AF 49 (638)-1344

Descriptors: (*Brainwashing, Bibliographies), (*Prisoners, Brainwashing), Psychological warfare, Drugs, Military personnel, Lie detectors, Stress (Psychology), Communists.
Identifiers: *Prisoners of war, *Interrogation.

The bibliography was prepared by the Principal Investigator of this contract in preparation for a special conference on training programs for required captivity behavior. It contains about 200 items in the unclassified literature, mostly commercial publications and professional journals appearing during the decade following the Korean War (1953-1963). (Author)
AD-670 999 HC$3.00 MF$0.65

NOTES ON THE PHYSICAL STATE OF THE PRISONER OF WAR AS IT MAY AFFECT BRAIN FUNCTION,
Bureau of Social Science Research Inc Washington D C

Figure 3 (sheet one) Sample page from USGRDR

Lawrence E. Hinkle, Jr. Sep 63, 8p AFOSR-68-1407
Contract AF 49 (638)-1344

Descriptors: (*Prisoners, *Brainwashing), Brain, Physical fitness, Sleep, Fatigue (Physiology), Reaction (Psychology), Behavior, Psychological warfare, Psychophysiology, Stress (Psychology).
Identifiers: *Prisoners of war, Sleep deprivation.

The paper, by a medical authority on POW problems, was prepared for a conference on training on required captivity behavior in 1965. Deprivations of captivity, their possible effects on brain function and the implications for POW and captors are briefly noted.
AD-671 001 HC$3.00 MF$0.65

PRISONERS IN THE COLD WAR: HOSTAGE ACTORS IN LOYALTY PLAYS,
Bureau of Social Science Research Inc Washington D C
Grace Malakoff. Sep 63, 14p AFOSR-68-1409
Contract AF 49 (638)-1344

Descriptors: (*Prisoners, *Brainwashing), Cold war, Propaganda, Attitudes, Behavior, Military personnel, Public opinion, Military psychology, Stress (psychology), Communists.
Identifiers: *Prisoners of war.

This paper was prepared in connection with a conference on captivity behavior held in 1963. The writer presents her personal interpretation of detainees in a cold-war situation as comparable to hostage actors in an international loyalty play.
AD-671 002 HC$3.00 MF$0.65

ROLES--NOT RULES--FOR THE POW,
Bureau of Social Science Research Inc Washington D C
Edgar H. Schein. Sep 63, 22p AFOSR-68-1408
Contract AF 49 (638)-1344

Descriptors: (*Prisoners, Behavior), Brainwashing, Military training, Military personnel, Survival, Stress (Psychology), Social communication, Communists, Propaganda, Psychological warfare, Attitudes.
Identifiers: *Prisoners of war.

The paper was prepared by the author as a consultant contributor to a conference held in 1963 on training programs for required behavior in the event of capture. A case is presented for emphasizing positive standards of conduct required of the POW rather than passive resistance or negative obedience of rules. The author who is now Professor of Industrial Management, M.I.T., was active in the Army research program in POW behavior in the Korean War. His book, Coercive Persuasion, Norton, 1961, contains a follow-up on a select group of Army returnees.
AD-671 003 HC$3.00 MF$0.65

PRELIMINARY REPORT ON CHINESE COMMUNIST INDOCTRINATION OF MILITARY PRISONERS OF WAR,
Bureau of Social Science Research Inc Washington D C
John W. Lewis. Sep 63, 8p AFOSR-68-1410
Contract AF 49 (638)-1344

Descriptors: (*Prisoners, *Brainwashing), China, Communists, Behavior, Military personnel, Psychological warfare, Military training, Attitudes, Limited war, Stress (Psychology), India, Armed forces (Foreign).
Identifiers: *Prisoners of war.

The report on POW indoctrination was prepared under this contract for a special conference on training programs conducted on required captivity behavior. The report is based on limited data from the Korean War and the Chinese invasion of the Indian frontier in October 1962.
AD-671 004 HC$3.00 MF$0.65

16. MISSILE TECHNOLOGY

16A. Missile Launching AND Ground Support

THE AIR FORCES ON A MISSILE NEAR A BOMB BLAST FROM THE MOTION OF THE SILO WALLS,
Boeing Scientific Research Labs Seattle Wash Mathematics Research Lab
For primary bibliographic entry see Field 20N.
AD-671 027 HC$3.00 MF$0.65

16D. Missiles

ROCKET DISPERSION,
Foreign Technology Div Wright-Patterson AFB Ohio
S. P. Kiselev, and Yu. V. Chuev. 30 Aug 67, 67p
Rept no. FTD-MT-67-32
Edited machine trans. of mono. Rasseivanie Raket, Moscow, 1964 p1-88.

Descriptors: (*Rockets, *Terminal ballistics), Guided missiles, Spin-stabilized ammunition, Circular error probable, Guided missile warheads, Guided missile computers, Inertial guidance, Homing devices, Preset guidance, Guided missile trajectories, Miss distance, Errors, Radar equipment, Radar homing, Guided missile antennas, Radar antennas, Command + control systems, Remote control systems, Performance (Engineering), Mathematical analysis, USSR.
Identifiers: Translations.

This report is a military publication written by two engineer colonels for the benefit of officers and soldiers of the rocket forces, cadets of military academies, and other interested students of rocket dispersion. Text is designed for complete comprehension by those with a secondary education. An explanation of the mathematics underlying dispersion is provided. The connection between rocket dispersion and warhead characteristics as a factor in probability of target destruction is shown, e.g. a warhead of large lethal radius can compensate for a certain amount of dispersion error. Mass firing of rockets is regarded as less favorable than more efficient elimination of dispersion factors. The last two chapters are devoted to the causes of rocket dispersion for both guided and ballistic types. Specifically excluded are air-to-air and surface-to-air missiles which are beyond the intended scope of this publication. (Author)
AD-670 964 HC$3.00 MF$0.65

17. NAVIGATION, DETECTION, COMMUNICATIONS, AND COUNTERMEASURES

17A. Acoustic Detection

STUDY OF SONAR ARRAY PROCESSING TECHNIQUES.
Final rept. 1 Jan 67-31 Mar 68,
Massachusetts Inst of Tech Cambridge Research Lab of Electronics
Harry L. Van Trees. 31 Mar 68, 21p
Contract N00140-67-C-0210

Descriptors: (*Sonar arrays, Processing), Optimization, Integral equations, Functions, Algorithms, Differential equations, Design, Noise, Theses, Random variables, Detection, Theory.
Identifiers: Karhumen-Loeve theory.

The report is concerned with the use of state-variable techniques for solving Fredholm integral equations, and the application of the resulting theory to several communication problems. It discusses the following areas: the solution of homogeneous and nonhomogeneous Fredholm integral equations; optimal signal design for additive colored noise channels; optimal smoothing and filtering with delay; smoothing and filtering for nonlinear modulation systems; and estimation in a distributed environment. (Author)
AD-670 557 HC$3.00 MF$0.65

TRANSIENT ANALYSIS OF TRANSDUCER ARRAYS,
Parke Mathematical Labs Inc Carlisle Mass
Charles H. Sherman, and Dorothy A. Moran. May 68, 43p Rept no. Scientific-1
Contract N00140-68-C-0109

Descriptors: (*Sonar arrays, *Transducers), Differential equations, Transients, Sources, Interactions, Underwater sound, Mathematical analysis, Velocity, Acoustic properties, Electrical properties, Damage.

A method for analyzing the transient behaviour of the transducer velocities in an array of transducers is described and used to obtain results for several typical situations. The method is based on a finite difference iteration solution of the differential equations for the array. It uses results of Mangulis for the transient self acoustic loading and makes approximations for the acoustic interactions based on Rayleigh's general expression for the field of a source in an infinite, rigid plane. The results obtained are for small plane arrays of small circular pistons. They show that the transient period can be considerably extended by the interactions and that effects of practical importance such as velocity overshoots often occur during the transient period. (Author)
AD-670 804 HC$3.00 MF$0.65

DETECTORS FOR ACTIVE SONAR.
Research and Development rept. for Mar 66-Aug 67,
Naval Undersea Warfare Center San Diego Calif
J. L. Teeter. Feb 68, 64p Rept no. NUWC-TP-29

Descriptors: (*Sonar targets, Detection), Sonar signals, Detectors, Signal-to-noise ratio, Background, Correlators, Statistical processes, Reverberation, Sampling.

The optimum detector is derived from statistical decision theory for various assumptions on the target echo and the active-sonar background-noise process. Actual sonar data are used to investigate the assumptions that the background-noise process is gaussian and stationary, and to compare the performance characteristics of the noise-weighted linear correlator, the simple linear correlator, and the polarity-coincidence correlator. (Author)
AD-671 192 HC$3.00 MF$0.65

INVESTIGATION OF THE CALIBRATION OF MICROPHONES FOR SONIC BOOM MEASUREMENT.
Ling-temco-vought, Inc., Dallas, Tex. LTV Research Center.
R. Brown, and J. J. Van Houten. Jun 68, 60p
NASA-CR-1075, TR-0-71200/7TR-112
Contract NAS1-5652
Jun. 1968 Coll- 60 P Refs

Descriptors: *Calibrating, *Microphones, *Sonic booms, Actuators, Bibliographies, Dynamic pressure, Infrasonic frequencies, Shock tubes, Shock waves, Transient pressures.

For abstract, see STAR 06 14.
N68-25316 HC$3.00 MF$0.65

17B. Communications

COMMUNICATION POLICY ISSUES FOR THE COMING COMPUTER UTILITY,
Rand Corp Santa Monica Calif
For primary bibliographic entry see Field 17B.
AD-670 505 HC$3.00 MF$0.65

these typical pages and notice the following:

- No abstracts are given for AEC and NASA reports. For these abstracts, the reader is referred to the AEC journal Nuclear Science Abstracts (NSA) or the NASA journal Scientific and Technical Aerospace Reports (STAR). Bibliographic and ordering information are given in USGRDR. See the report labeled A on page 14.

- Reports covering more than one subject are announced in the primary subject field and cross-referenced to related subjects. See the reports labeled B on page 13.

- Within each subject field or group, reports are listed in alphanumeric order. That is, on page 13 AD 670 984 appears before AD 670 999. Likewise, AD 671 112 appears before PB 173 686.

- Most reports available from the Clearinghouse are sold for $3.00 in paper copy (HC) and 65¢ in microfiche (MF). Reports available from other sources are priced as shown in the journal.

USING USGRDR

When a scientist or a librarian scans each issue of USGRDR as it becomes available, then the journal is being used as a current-awareness tool. Searching in this way, the user selects one or more subjects of special interest, locates the corresponding fields and groups, and scans all the titles and abstracts that appear under the appropriate subject headings. Document numbers and prices are noted for items the user intends to order.

USGRDR Index

Each semimonthly index issue of USGRDR provides access only to the corresponding issue of the USGRDR abstract journal. There are actually five separate color-coded indexes in the index volume; access is by subject, personal author, corporate author, contract/grant number, and accession/report number. Each index entry gives the subject field and group in which the report appears in the USGRDR abstract issue, a code for the journal where the abstract of the report appears (if not in USGRDR), and the price of the report if it is available from the Clearinghouse.

A USGRDR index issue can also be used as a current-awareness tool. In this case, the user has in mind a particular subject, author, or contract number that he would like to keep track of. When each issue arrives he looks for index entries that are of interest to him; the information provided allows him to find the corresponding abstract in the abstract journal or to record the document accession number(s) so that the items can be ordered.

A typical entry taken from the subject index contains the following information:

ACOUSTIC EQUIPMENT(a)
INSTRUMENT FOR ACOUSTIC AND VIBRATION MEASUREMENTS.(b)
AD-627 041(c) 20A(d) U 67 05(e) HC$ 3.00 MF$ 0.65(f)

(a) Index entry.

(b) Title of report.

(c) Accession/report number—that number used by the announcing agency to uniquely identify the report. Use THIS number and title when ordering documents from the Clearinghouse.

(d) Field/group location in USGRDR.

(e) Code for journal, volume, and issue number in which the report is abstracted.

U—U. S. Government Research & Development Reports, Clearinghouse for Federal Scientific and Technical Information.

N—Nuclear Science Abstracts, Atomic Energy Commission.

S—Scientific and Technical Aerospace Reports, National Aeronautics and Space Administration.

(f) Clearinghouse prices for paper copy (HC) and microfiche (MF).

Samples of the five indexes that appear in every index issue are given below. These are taken from the complete set of instructions that appear in each USGRDR index issue.

SAMPLES

• SUBJECT INDEX

Entries are arranged by the subject terms assigned by the contributing agency (this means "asterisked" descriptors and identifiers for USGRDR entries, subject headings for STAR and NSA). The subject term appears at the beginning of each entry. The title of the report is indented below the subject term. For NSA entries, the "modifier" which is assigned by AEC is used in place of the title. The "accession number" line giving field/group, journal, and price information for the report follows the last line of the title. If two or more reports are indexed under the same subject term, they are listed in accession number sequence under the term (separated by a black line). If two or more reports under a subject term have identical titles, the title is printed once and the different accession number lines are printed below the title.

```
AERODYNAMIC CHARACTERISTICS
  USE OF POLYNOMIAL APPROXIMATIONS IN DIGITAL COMPUTERS FOR
  SOLUTION OF AIR DATA FORMULAE.
  N67-22948                          1A S05 11 HC$  3.00 MF$ 0.65

  EXPERIMENTAL VEHICLE PV-1 WITH AIR CUSHIONS. FLIGHT TEST
  (VEHICLE WITHOUT FLAPS).
  N67-22970                          1C S05 11 HC$  3.00 MF$ 0.65
  .
  .
  .
AERODYNAMIC HEATING, HYPERSONIC FLOW
  REAL GAS EFFECTS IN HYPERSONIC AERODYNAMIC HEATING.
  AD-650 849                         20D U67 12 HC$  3.00 MF$ 0.65

  AD-650 984                         20D U67 12 HC$  3.00 MF$ 0.65
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• PERSONAL AUTHOR INDEX

Entries are arranged by personal author, editor, or compiler. The names are presented last name first. Title of the report (or reports) is indented below the author's name. The "accession number" line follows the title. Certain anomalies occur when sorting by computer. While true for all indexes in this journal, they are most noticeable in the Personal Author Index. The requirements of a computer sort cause "JOHNS, J.J." to appear after "JOHNSON, F.X." (the comma sorts after the O in SON), but "SMITH-JONES, A.B." will appear ahead of "SMITHERS, P.P." (the hyphen sorts ahead of the E in SMITHERS).

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ANGUS, JOHN C.
  DEPOSITION OF CARBON ON DIAMOND SEED CRYSTALS.
  AD-651 059                         20B U67 12 HC$  3.00 MF$ 0.65
ANNIS, J. A.
  BIO-THERMAL RESPONSES TO VARIED WORK PROGRAMS IN MEN KEPT
  THERMALLY NEUTRAL BY WATER COOLED CLOTHING.
  N67-22151                          6S S05 11 HC$  3.00 MF$ 0.65
```

• CORPORATE AUTHOR

Entries are arranged by the corporate author of each report as catalogued by the contributing agency. Title of the report (or reports) is indented below the corporate author and the "accession number" line follows the title. Some inconsistencies appear. However, as the new corporate authority list prepared by the Committee on Scientific and Technical Information (COSATI) comes into general use among the contributing agencies, it is expected that all entries for a given organization will appear under a common heading in this index.

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AIR FORCE FLIGHT TEST CENTER, EDWARDS AFB, CALIF.
  SYMPOSIUM ON PARACHUTE TECHNOLOGY AND EVALUATION,
  PROCEEDINGS.  VOLUME I.
  AD-452 430                         1C U67 12 HC$  3.00

  SYMPOSIUM ON PARACHUTE TECHNOLOGY AND EVALUATION,
  PROCEEDINGS.  VOLUME II.
  AD-452 431                         1C U67 12 HC$  3.00
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• CONTRACT NUMBER INDEX

Entries are arranged alphanumerically by contract number and by grant number. Accession numbers appear in sequence with field/group, journal, and price information indented below the appropriate contract or grant number. Report titles are not included in this index.

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CONTRACT AF 61(052)-851
  AD-650 719                         17B U67 12 HC$  3.00 MF$ 0.65
CONTRACT AF-EOAR-63-36
  N67-23238                          7C S05 11 HC$  3.00 MF$ 0.65
CONTRACT AT(29-1)-1106
  RFP-686                            20H N21 09 HC$  3.00 MF$ 0.65
  RFP-792                            20C N21 09 HC$  3.00 MF$ 0.65
  RFP-879                            7B N21 09 HC$  3.00 MF$ 0.65
  .
  .
GRANT NSF-GS-552
  PB-174 442                         12A U67 12 HC$  3.00 MF$ 0.65
GRANT NSF-G24442
  PB-174 522                         5J U67 12 HC$  3.00 MF$ 0.65
GRANT NSG-134-61
  N67-22357                          4A S05 11 HC$  3.00 MF$ 0.65
  N67-23273                          9D S05 11 HC$  3.00 MF$ 0.65
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• ACCESSION/REPORT NUMBER INDEX

Entries are arranged alphanumerically by accession number assigned by the contributing agency and by technical report and monitoring agency number. Some reports have more than one number. All reports covered in this index are represented by at least one unique number. Accession numbers appear in sequence with field/group, journal, and price information on the same line; other numbers associated with the report appear in sequence followed by an indented "accession number" line. Report titles are not included in this index.

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AD-479403
  N67-22704                          1D S05 11 HC$  3.00 MF$ 0.65
AD-489 159                           12A U67 12 HC$  3.00 MF$ 0.65
AD-50 040                            13D U67 12 HC$  3.00
AD-63 045                            5E U67 12 HC$  3.00 MF$ 0.65
AD-643163
  N67-22449                          20I S05 11 HC$  3.00 MF$ 0.65
AD-643497
  N67-23050                          6P S05 11 HC$  3.00 MF$ 0.65
AD-645488
  N67-23238                          7C S05 11 HC$  3.00 MF$ 0.65
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The Cumulative Indexes

We have already said that the Clearinghouse publishes quarterly and annual cumulative indexes. A cumulative index combines new items and items from one or more earlier issues to form a new unified list. These volumes are arranged exactly like the individual index issues, except that the cumulations require publication in two volumes. One volume contains the subject index, the other contains the personal author, corporation author, contract/grant number, and accession/report number indexes. The color-coding of the separate index sections is maintained. As is always true when cumulations appear, you should be sure to discard the individual index issues that the cumulation replaces. This prevents duplicate searching. For any publication year, you should (ideally) never have more than one cumulated index issue and/or six individual index issues (three months) to search. (Sometimes, of course, you will receive additional semimonthly index issues before the latest cumulation arrives.)

Using the Cumulations for Retrospective Searching

Look again at the sample questions on pages 3 and 4. You can see that most of these questions give you enough factual information to begin searching but do not tell you the time period during which the desired information is likely to have appeared. Since we have said that technical reports are valuable because they represent the latest information, it is usually safe to assume that you should begin to search the current issues and work back two or three years or until you find the information that satisfies the search.

The most efficient way to search is as follows:

1. Identify the most recent cumulative index, either quarterly or annual.
2. Search the individual index issues that appeared <u>after</u> the most recent cumulative index.
3. Search the most recent cumulative index.
4. Search the most recent annual index.
5. Search the next most recent annual index, etc.

EXERCISES

To practice using USGRDR, obtain a copy of the index issue and the abstract journal, both dated August 25, 1968. See if you can find answers to the following questions.

1. "My development project is concerned with applications of lasers. Are there any recent technical reports on this subject?"

   A. Can you answer this question from the index issue alone?

   B. Can you answer this question from the abstract issue alone?

   C. If you wanted to search all 1968 USGRDR-announced reports, how would you go about it?

2. "I'm in a hurry for a copy of a report titled "Radiation Damage of Low Permeability Graphite and Hard Carbon" from the Japan Atomic Energy Research Institute. Can you tell me its availability and price?"

   A. In how many different places in the index can this report be found?

   B. Is it necessary to look in STAR to find the price and availability of this report?

3. "Who has worked on the project called AUDACIOUS under grant NSF-GN-433?"

   A. Find the authors of this report and their affiliation.

   B. Has either of these authors published any other report that is announced in this issue?

   C. Are there any other reports originating from the American Institute of Physics that are announced in this issue?

4. If your library buys all new education bibliographies, would there be something appropriate in this issue of USGRDR?

Try to answer this question by looking in two places in the subject index. Does this exercise show why it is important to learn the characteristics of each indexing tool?

This is the end of this unit of instruction.